(54) **Title: METHODS AND SYSTEMS USING PREDICTION OF OUTCOME FOR LAUNCHED OBJECTS**
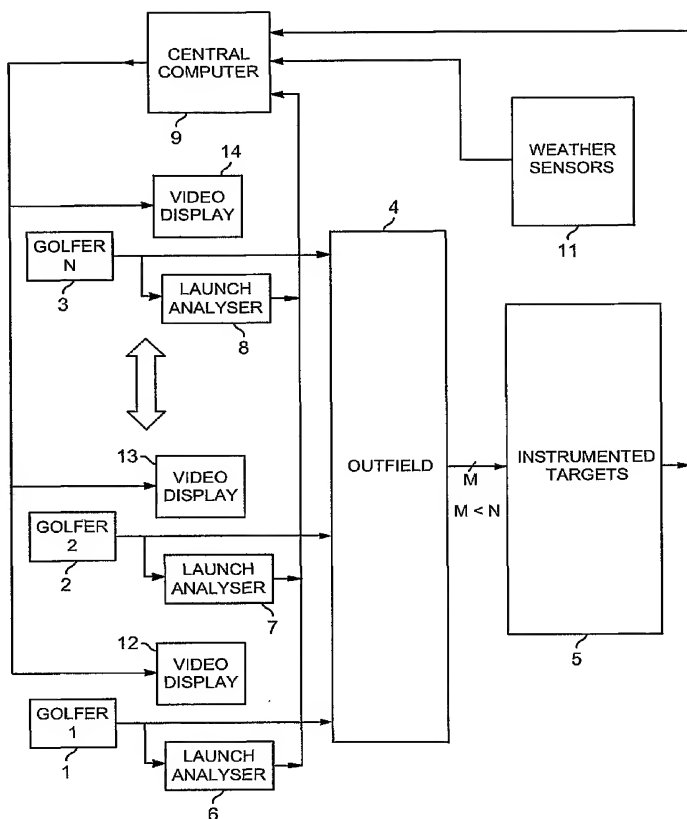
(57) **Abstract:** Each golfer (1-3) on a golf range (4) has an individual display (12-14) showing at least a predicted outcome of each of his/her shots, and a launch-analyser (6-8) to measure velocity vectors of the ball and/or club at strike for central-computation (9) of the prediction. Vibration and piezo-cable sensors (54, 55; 68, 69) at instrumented targets (5; 41-45, 47) distributed throughout the range (4), detect the presence of balls arriving in their respective locations for matching with launched balls using the computed predictions and probability; active or passive radio-frequency identification and location of balls may also be used. Where a match is found, error between predicted and actual outcome is applied to adaptive correction of the predictioncomputing process, and the actual outcome is displayed to the golfer instead of the prediction. Ball and/or club velocity vectors, and ball spin, at launch are measured from light changes occurring in detection planes (96, 97; 105; 114-117; 134; 144-146) defined by slit apertures (94, 95; 104), and resulting from retro-reflection from ball (91; 110; 131) and/or club (130).

SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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